Remarks

This is to place the claims in better condition for examination as to formalities as well as to conform the title to the Combined Declaration/Power of Attorney.

Respectfully submitted,

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APPENDIX

AMENDED CLAIMS WITH AMENDMENTS THEREIN INDICATED BY BRACKETS AND UNDERSCORING

1. (Amended) Affinity sensor for detecting specific binding events, comprising a carrier substrate [(1),] provided with at least two electrodes [(2)] and [a range (4)] having a predetermined area, said electrodes being equidistantly spaced apart from each other and engagingly [border] bordering said [range 4] area from both sides, at least said [range (4)] area being adapted for receiving immobilized specific binding partners [(5)], said specific binding partners [(5)] being capable of coupling complementarily associated binding partners [(6)] directly or via further specific binding molecules [(7)], said [range (4)] area having a minimum width [b being] adapted [to] for capture of at least one complementarily associated being partner [(6), which is] provided with one electrically conductive particle [(62) in] within said [range] area in such a way as to allow for [the] formation of a respective tunnel contact junction between the particle [(62)] and the electrodes [(2)].

2. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that the range (4) is given a width b of] wherein said width is under 800 nm.

3. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the immobilized specific binding partners [(5) covering also] cover the electrodes [(2)] with a thickness which permits tunnel effects.

4. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the electrodes [(2)] are each [designed as] two micro-electrodes [(21) each,] arranged in [pairs] a pair, [which are] the electrodes being connected to an amplifier circuit [(8)] with an associated measuring and evaluating unit [(3)] so that an electric current flow across the [range (4)] area can be detected when there is a voltage applied across the electrodes [(2)].

5. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 4, [characterized in that] wherein the electrodes [(2)] are part of the amplifier circuit [(8 projecting] and project from out of the latter.

6. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 5, [characterized in that] wherein the amplifier circuit [(8)] is a component of a microchip [(9)].

7. (Amend) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the electrodes [(2)] are [designed as] comb-like [meshing] structures opposingly meshed, whereby there are located affinity areas [(41)] at least between the respective opposing [comb-type] electrodes [(22)].

8. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 7, [characterized in that] wherein the [comb-type] comb-like electrodes [(22)] and the affinity areas [(41)] are arranged on a common chip surface [(42)].

9. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 8, [characterized in that] wherein the chip surface [(42] is formed by a silicon wafer.

10. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 8, [characterized in

that] wherein the chip surface [(42)] is formed by a glass target.

11. (Amended) Affinity sensor for detecting specific molecular binding events as claimed [in claim 1 and] claim 7, [characterized in that] wherein the [comb-type] comb-like electrodes [(22)] are arranged in geometrical symmetry to [the] interdigital structures and [in that] a plurality of affinity areas [(41)] is arranged in a matrix, whereby the electrodes [(2)] provided outside of the affinity areas [(41)] are separated from each other at their intersections [(23)] by an insulating layer [(24)] arranged between the intersections.

12. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 or] claim 7, [characterized in that] wherein the length of the micro-electrodes [(21)] is 0.1 mm, the width [b] of the [range (4)] area is 0.1 μm and its effective height is 0.02 μm as well as the affinity areas [(41)] is at a 1:10 ratio relative to the chip surface [(42)].

13. (Amended) Affinity sensor for detecting specific molecular binding events as [claims 1 or] claim 7, [characterized in that] wherein in addition to the affinity areas [(41)] at least one reference area [(43)] is provided which carries inactive binding

partner [(51)] for a reference measurement instead of the specific binding partners [(5)].

14. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 or] claim 7, [characterized in that] wherein the occupation density of the specific binding partners [(5)] on the individual affinity areas [(41)] is different.

15. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 or] claim 7, [characterized in that] wherein the individual affinity areas [(41)] carry different specific binding partners [(5)].

16. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [the claims] claim 1, 13, 14 or 15, [characterized in that] wherein a plurality of reference areas [(43)] is provided being occupied with different inactive binding partner [(51)].

17. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the specific binding partners [(5)] enter into [co-ordination] coordination compounds.

18. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the specific binding partners [(5)] are bioactive or biomimetic molecules.

19. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 17, [characterized in that] wherein the specific binding partners [(5)] are nucleic acids.

20. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 17, [characterized in that] wherein the specific binding partners [(5)] are proteins.

21. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in [claims 1 and] claim 17, [characterized in that] wherein the specific binding partners [(5)] are saccharides.

22. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the conductive particles [(62)] are [defined to a size] of sizes in the range of 0.1 μm to 5 μm.

23. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the conductive particles [(62)] are [defined to a size] of sizes in the nanometer range.

24. (Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, [characterized in that] wherein the conductive particles [(62)] consist of metal-cluster compounds.

25. (Amended) [Application] Method of using the affinity sensor for detecting specific molecular binding events as claimed in [one of the preceding claims] claim 1, [characterized in that] wherein the affinity sensor is utilized for the detection of complementarily associated binding partners [(6)] in the form of complex compounds.

26. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 25, [characterized in that] wherein the affinity sensor is utilized for the detection of complementarily associated binding partners [(6)] in the form of bioactive and biomimetical molecules.

27. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 25, [characterized in that] wherein the affinity sensor is utilized for the detection of complementarily associated binding partners [(6)] in the form of nucleic acids.

28. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] method according to claim 25, [characterized in that] wherein the affinity sensor is utilized for the detection of complementarily associated binding partners [(6)] in the form of proteins.

29. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 25, [characterized in that] wherein the affinity sensor is utilized for the detection of complementarily associated binding partners [(6)] in the form of saccharides.

30. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in one of the preceding claims 1 to] Method according to claim 24, [characterized in that] wherein the affinity sensor is utilized for biomonitoring.

31. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 30, [characterized in that] wherein the affinity sensor is utilized for the detection of cells.

32. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 30, [characterized in that] wherein the affinity sensor is utilized for the detection of microorganisms.

33. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 30, [characterized in that] wherein the affinity sensor is utilized for the detection of genetic and microbic diseases.

34. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according

to claim 30, [characterized in that] wherein the affinity sensor is utilized for the detection of gene expression.

35. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 32, [characterized in that] wherein the affinity sensor is utilized for the detection of microorganisms in ecological populations.

36. (Amended) [Application of the affinity sensor for detecting specific molecular binding events as claimed in] Method according to claim 30, [characterized in that] wherein the affinity sensor is utilized for medical diagnostics.